

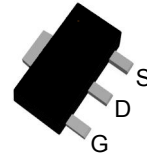
Features

- 30V/8A,
 $R_{DS(ON)} = 25m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 28m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

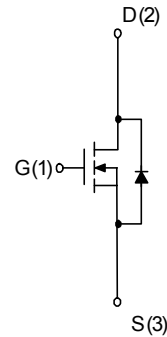
Applications

- Switching Regulators
- Switching Converters

Pin Description



Top View SOT-89



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
Common Ratings			
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 12	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	
I_S	Diode Continuous Forward Current	$T_A=25^\circ\text{C}$ 8	A
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$ 8	A
		$T_A=70^\circ\text{C}$ 4.8	
I_{DM}^a	Pulsed Drain Current	$T_A=25^\circ\text{C}$ 24	A
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 3.5	W
		$T_A=70^\circ\text{C}$ 2.2	
$R_{\theta JA}^c$	Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$ 35	$^\circ\text{C/W}$
		Steady State 70	$^\circ\text{C/W}$
I_{AS}^b	Avalanche Current, Single pulse	$L=0.1\text{mH}$ 10	A
E_{AS}^b	Avalanche Energy, Single pulse	$L=0.1\text{mH}$ 5	mJ

Note a : Pulse width limited by maximum junction temperature.

Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

Note c : Surface Mounted on 1in^2 pad area.

Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

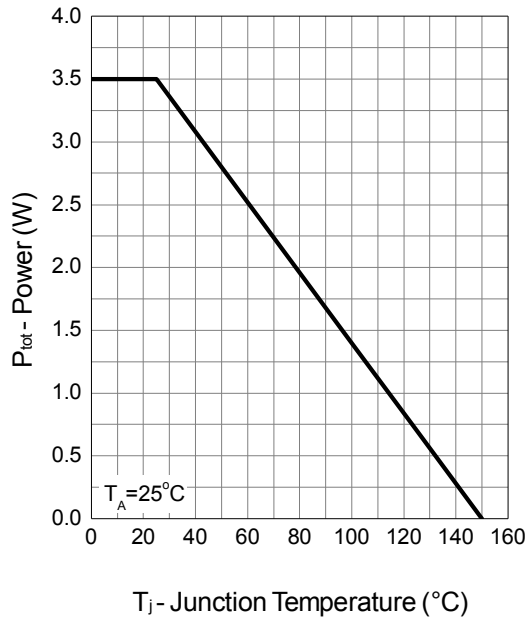
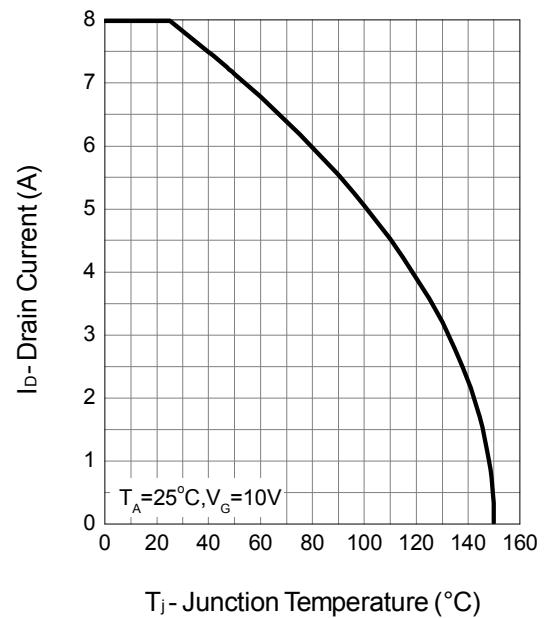
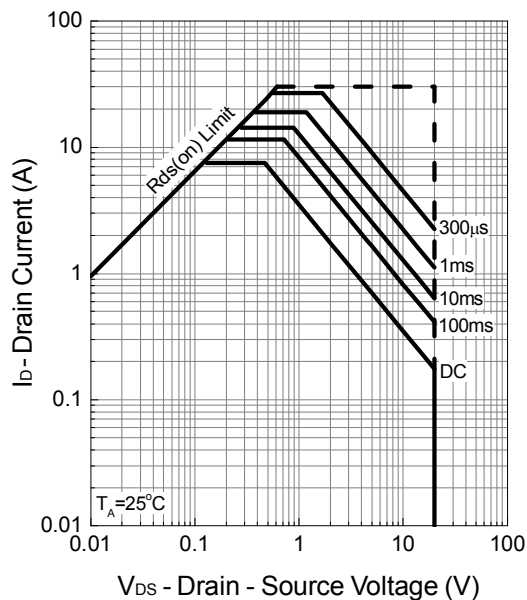
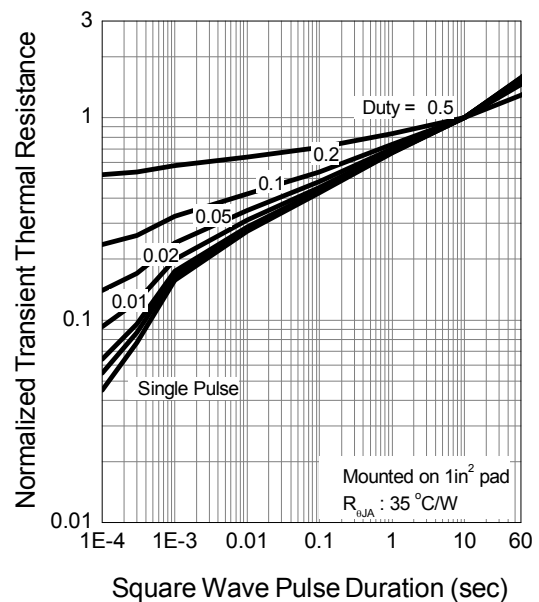
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.75	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =7.5A	-	25	28	mΩ
		V _{GS} =4.5V, I _{DS} =6A	-	28	31	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =4A, V _{GS} =0V	-	0.8	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =7.5A, dI _{SD} /dt=100A/μs	-	9	-	ns
Q _{rr}	Reverse Recovery Charge		-	2.5	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	1.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz	-	400	520	pF
C _{oss}	Output Capacitance		-	85	-	
C _{rss}	Reverse Transfer Capacitance		-	75	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, R _L =10Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	3.5	6.5	ns
t _r	Turn-on Rise Time		-	14	25	
t _{d(OFF)}	Turn-off Delay Time		-	20	36	
t _f	Turn-off Fall Time		-	4	7	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =7.5A	-	5.5	-	nC
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =10V, I _{DS} =7.5A	-	11.5	15	
Q _{gs}	Gate-Source Charge		-	0.3	-	
Q _{gd}	Gate-Drain Charge		-	2.6	-	

Note d : Pulse test; pulse width≤300μs, duty cycle≤2%.

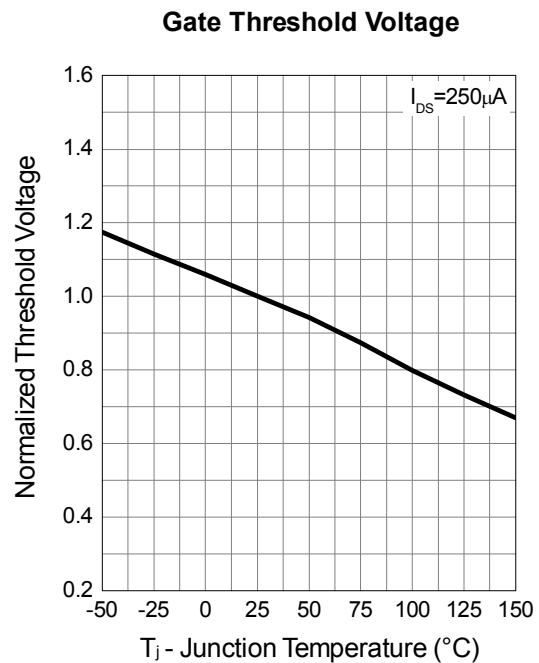
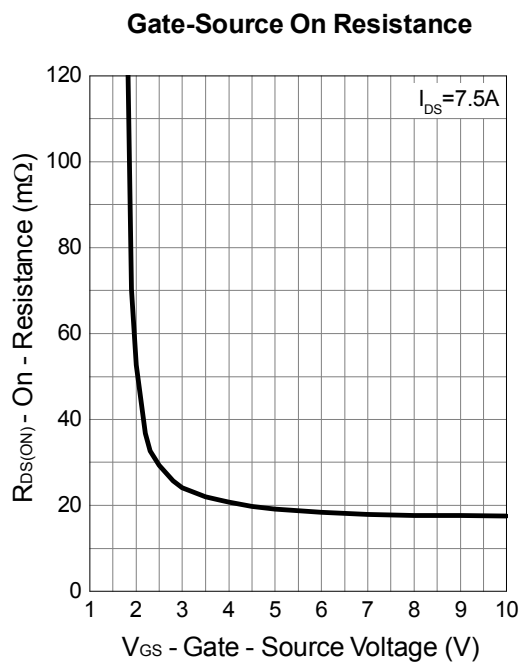
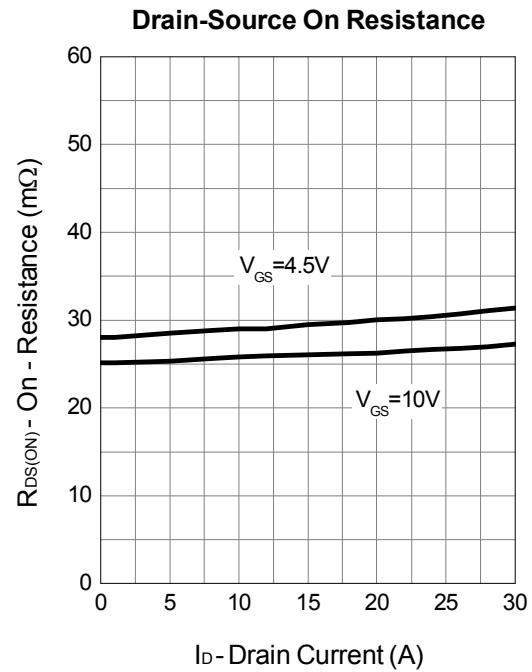
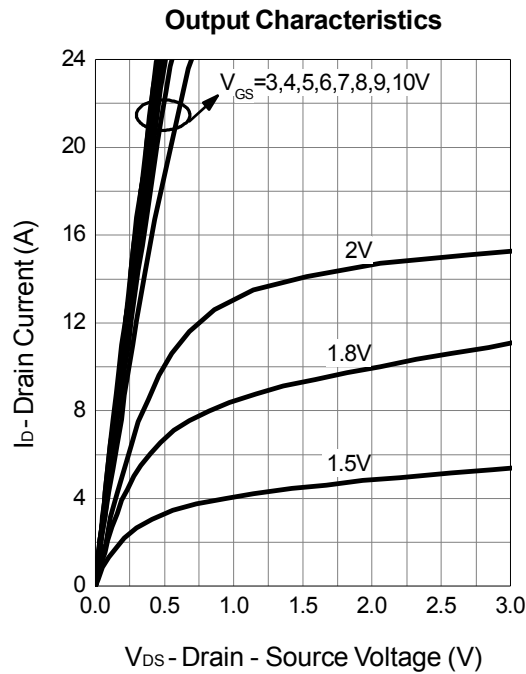
Note e : Guaranteed by design, not subject to production testing.

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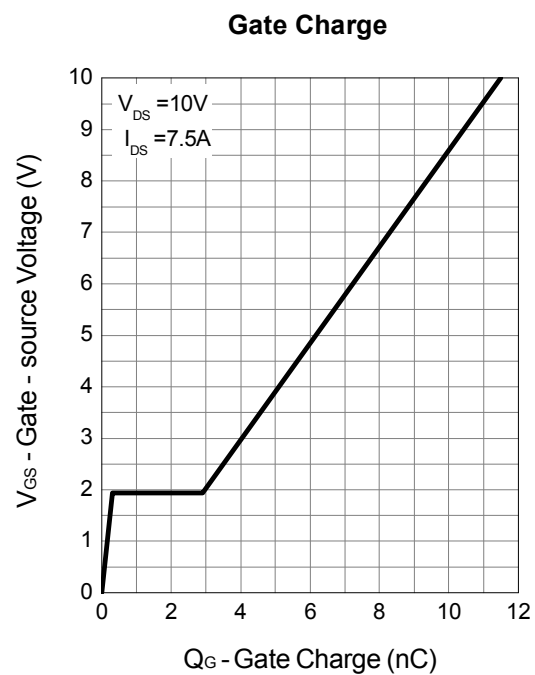
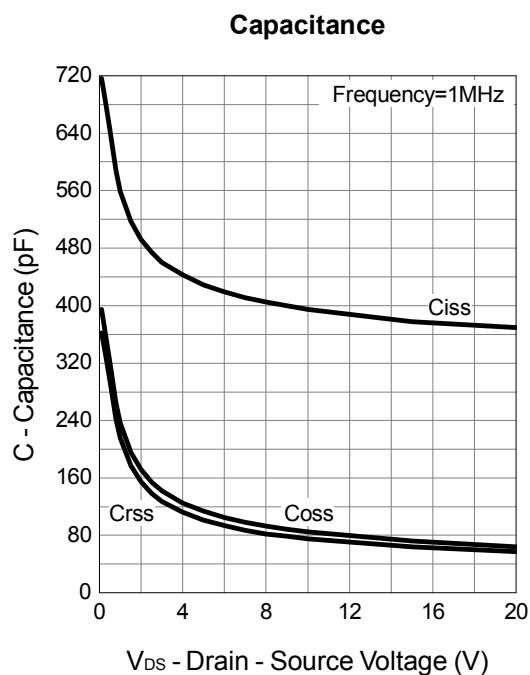
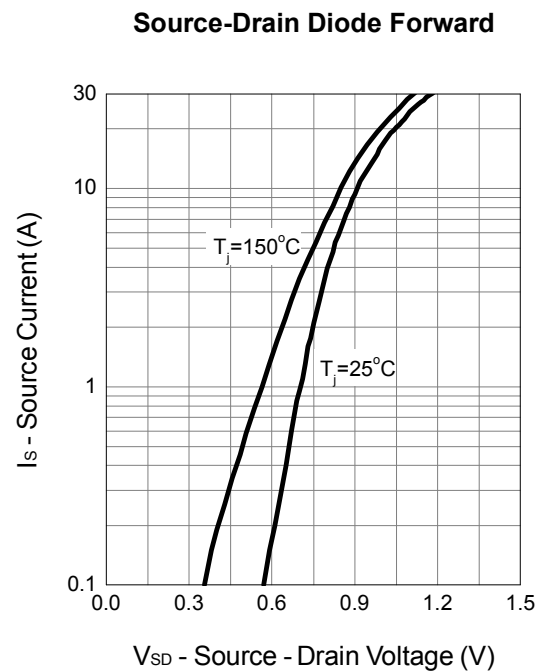
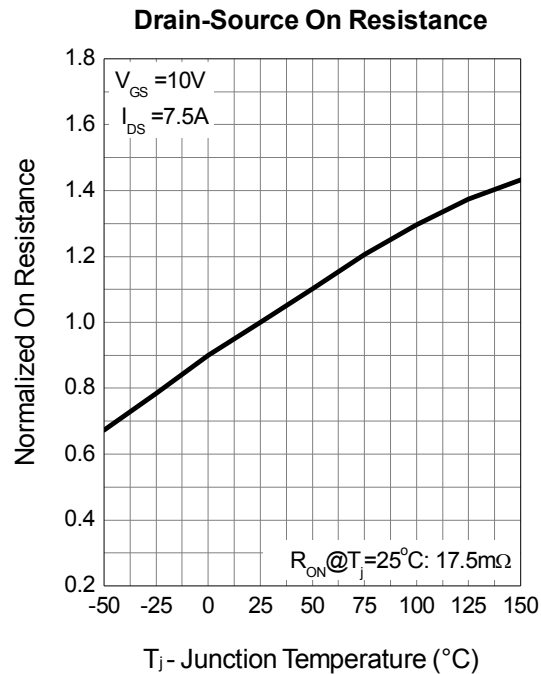
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


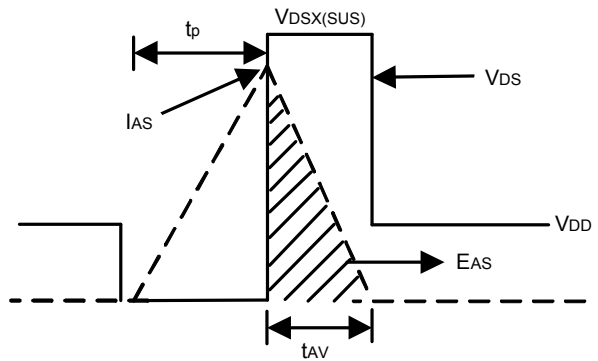
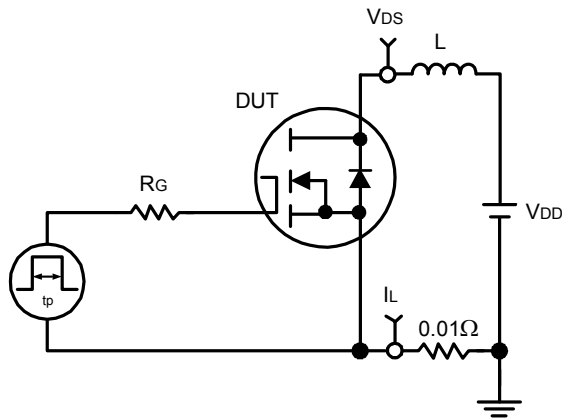
Typical Operating Characteristics (Cont.)



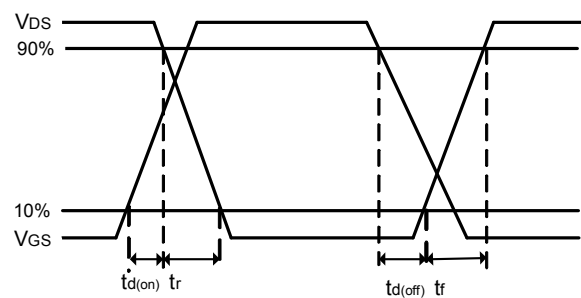
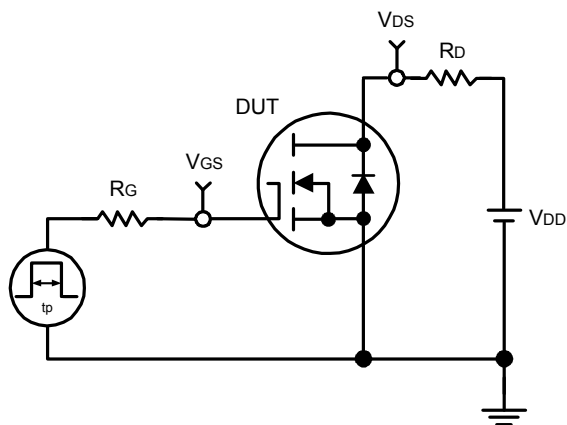
Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms

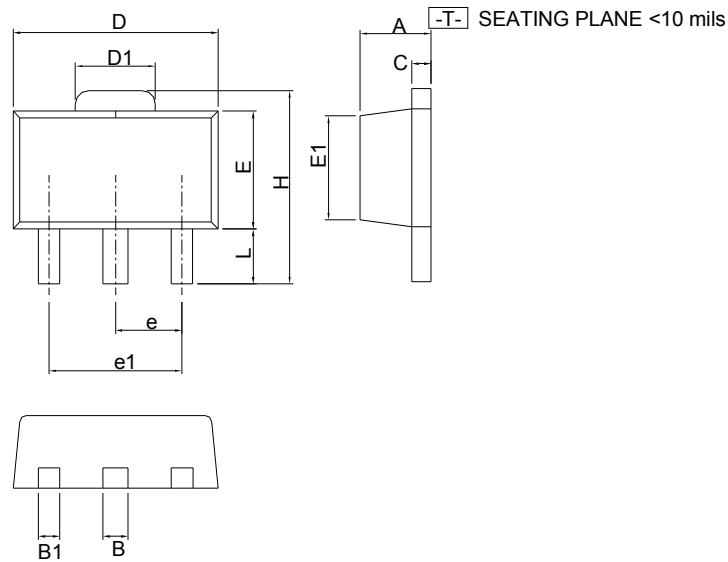


Switching Time Test Circuit and Waveforms



Package Information

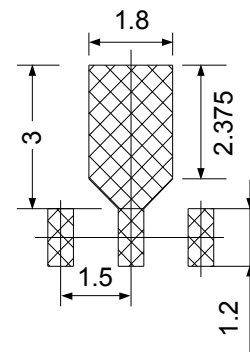
SOT-89



SYMBOL	SOT-89			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	1.40	1.60	0.055	0.063
B	0.44	0.56	0.017	0.022
B1	0.36	0.48	0.014	0.019
C	0.35	0.44	0.014	0.017
D	4.40	4.60	0.173	0.181
D1	1.62	1.83	0.064	0.072
E	2.29	2.60	0.090	0.102
E1	2.13	2.29	0.084	0.090
e	1.50 BSC		0.059 BSC	
e1	3.00 BSC		0.118 BSC	
H	3.94	4.25	0.155	0.167
L	0.89	1.20	0.035	0.047

Note : Follow JEDEC TO-243 AA.

RECOMMENDED LAND PATTERN



UNIT: mm